

2017

2017 Pesticide Safety - Weed Control Update

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Weed Control Update

Katherine Ghanous and Hilary Sandler
UMass Cranberry Station

Preemergence Herbicides

Efficacy in cranberry?

- **Affected by:**
 - **Soil type**
 - chemicals cling to certain soil particles better
 - **Temperature**
 - some volatilize (lost to air) (e.g. Casoron)
 - some are broken down by microbes, which are more active in warmer temps
 - **Water – irrigation and rainfall**
 - Can wash down below depth where weeds are
 - Can fill up soil air pockets with water (Casoron)

Preemergence Herbicides

Efficacy in cranberry?



Fig.1: Pepper Trial - PRE- Layby, WSREC, 2007

Preemergence Spring Herbicides

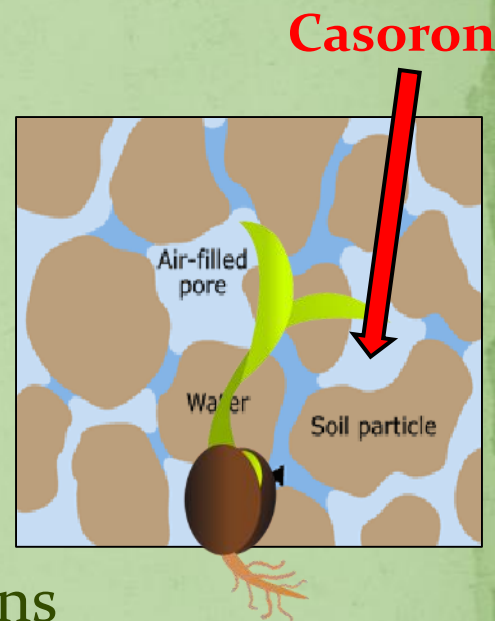
Casoron - Works on germinating seeds, somewhat on existing weeds. Inhibit cell wall synthesis, on growing points/root tips.

- **Apply when:**

- perennial weeds are still dormant
- annual weeds not started germinating
- during cool weather
 - Soil and air temps ideally below 60 F

- ***Must be incorporated***

- irrigation or rainfall soon after applications
- “Thoroughly incorporate granules into the surface through watering-in...”



Preemergence Spring Herbicides

Devrinol - Works on germinating seeds

- Active in the soil, inhibits root development
- Must be incorporated into the soil by rain or irrigation

Callisto – Absorbed by roots, shoots, and foliage

- Can be used PRE and/or POST
 - May have a shorter half life in sandy soils

Evital - Absorbed by roots

- Inhibits pigment synthesis, depletes chlorophyll, bleaching
- Use caution for spring application, esp. on wet soils and sensitive varieties (like Stevens)

Preemergence Spring Herbicides

QuinStar - absorbed by both the foliage and roots.



- Works slowly!
 - twisting, stunting, reddening and chlorosis
 - annual weeds - may take up to three weeks to develop
 - perennial weeds - full effect may not be evident for 3 to 6 months

Check with handlers for restrictions

Spring Herbicides After Late Water

Can be applied after late water:

- Casoron
 - Wait for bog to dry down

Likely safe

- Devrinol
- Callisto
- QuinStar



- Evital NOT recommended after late water

Options for dodder preemergence

Casoron

- If poor control with 40 lb/A, increase rate to 60 or 80 lb
- Scout! Timing is important.



QuinStar

- Preemergence or early postemergence
- Similar timing as Casoron
- 2nd application is allowed 30 days later
- *Handler restrictions

Callisto

- Some growers have good results using it pre/early post for dodder
- No sig results in GH trials for pre

Herbicides applied at elongation/roughneck

Cranberry plants at elongation/roughneck may be sensitive to herbicide applications

- Clethodim products
 - e.g. Select Max, Intensity, etc.
 - can cause floral deformities
 - may reduce yields on sensitive varieties
 - Howes seem most prone to these issues
- Devrinol
 - noted some very minor yield reduction when applications were made during roughneck



Poverty Grass



Perennial grasses increasingly problematic

2010 survey

- 0% selected perennial grass as their most problematic weed

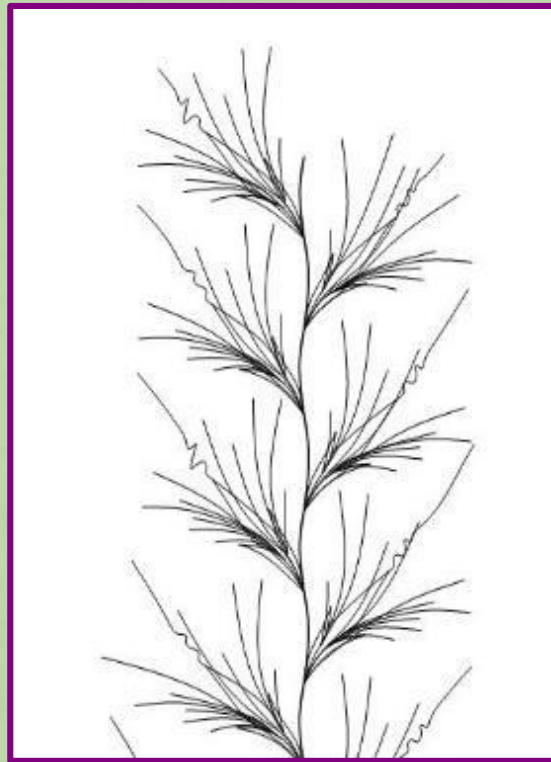
2015 survey

- 64% rated poverty grass (PG) as one of the four most common weeds
- 59% rated it one of the most difficult weeds to manage

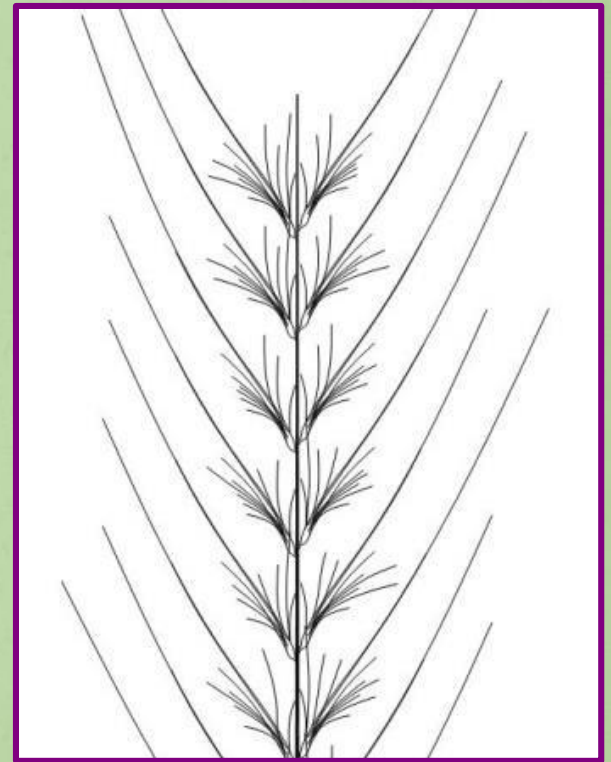


Poverty grass

- Broomsedge bluestem (*Andropogon virginicus*)
- Little bluestem (*Schizachyrium scoparium*)



Bent awns
Little bluestem



Straight awns
Broomsedge

Poverty Grass Growth

Very slow starter

- Populations seem to explode in August

Successful management

- Stop seedling establishment (PRE)
- Stop seed production (POST)
- Kill adult plants (POST)



JUNE 3

JUNE 24

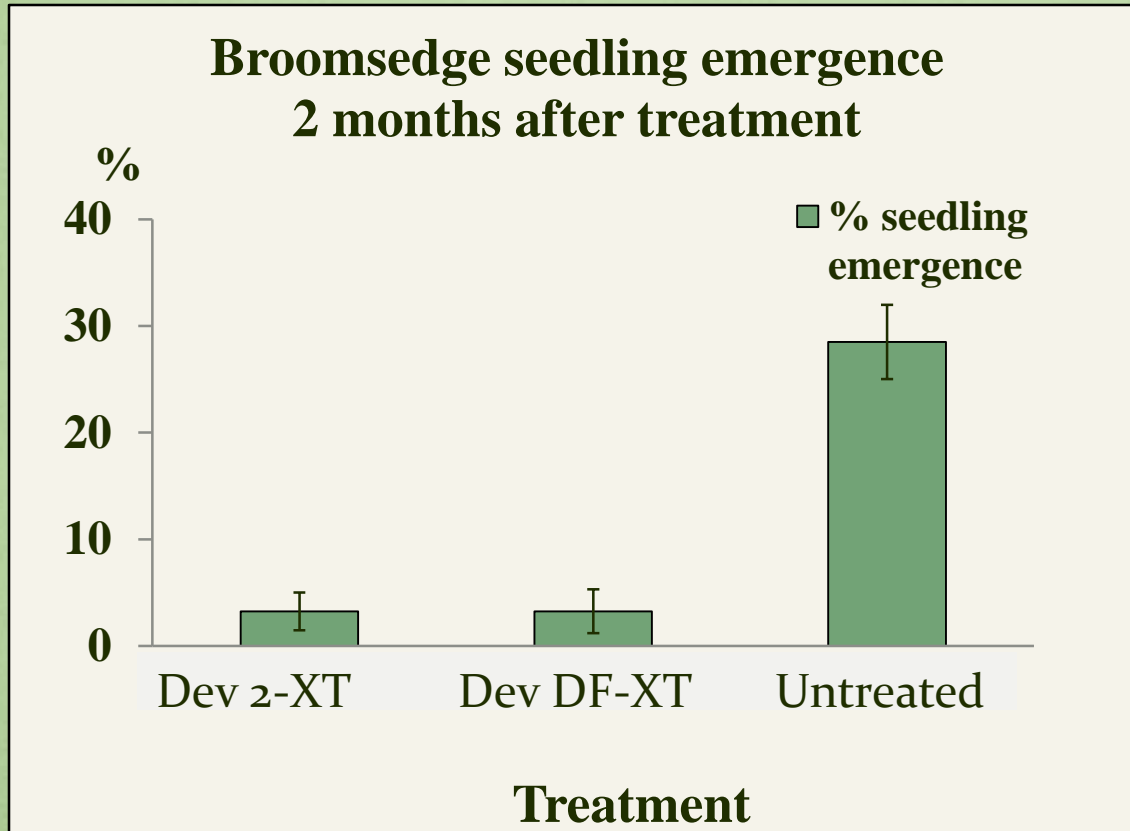
JULY 10

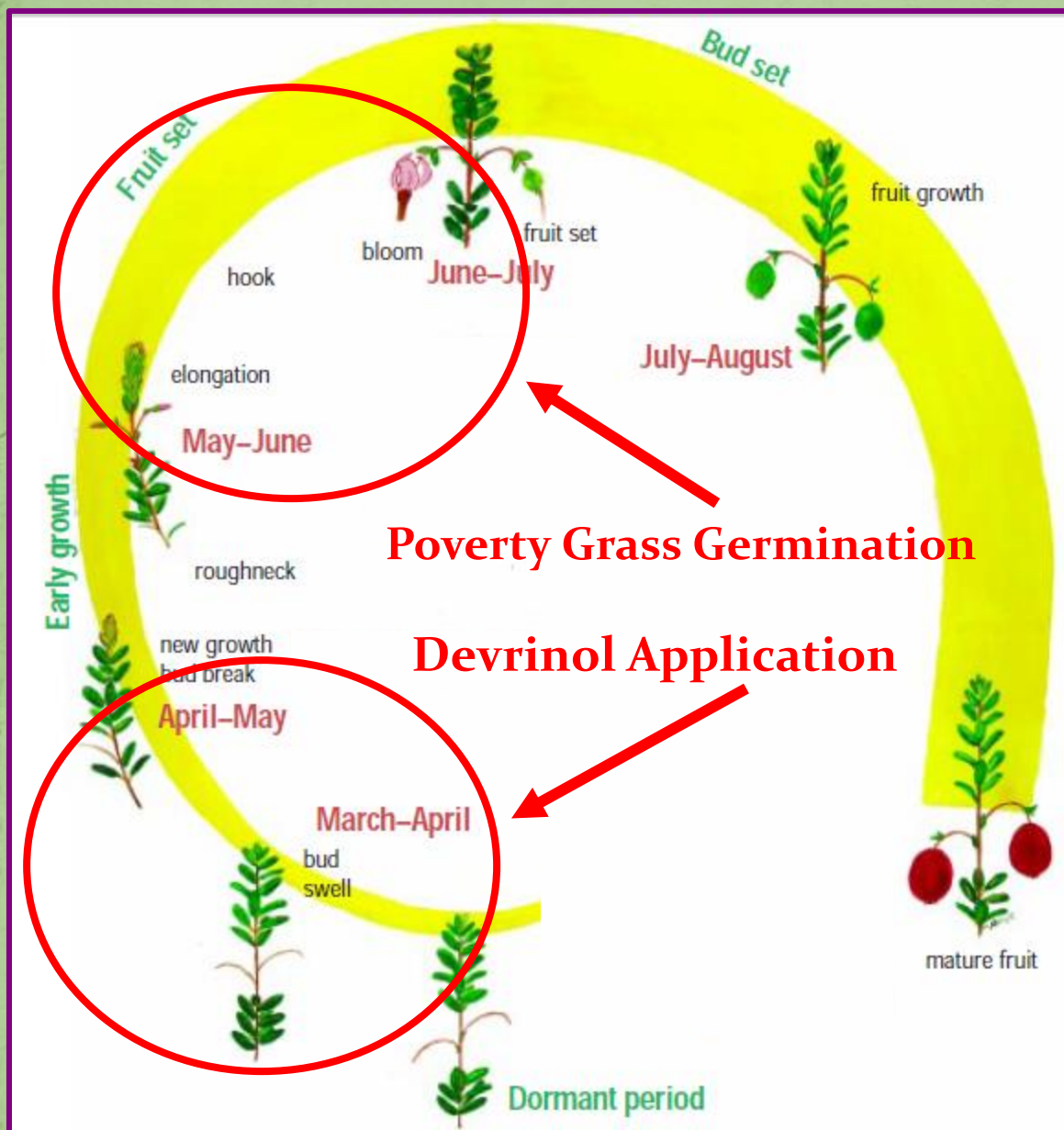
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Devrinol (napropamide)

Devrinol - preemergence herbicide

- Greenhouse trials – good controls of BS and LBS seeds
 - Control not seen when used in the field





Herbicide activity not overlapping with germination.

Devrinol labeled for application before spring growth begins...

Are later Devrinol apps safe for cranberry?

Applied at various cranberry stages
(pre-budbreak, roughneck, hook stage, bloom, fruit set)



- ✓ No yield differences between any timing and untreated
- ✓ Residues from all timings below MRL
- ✓ Will try to work with UPI on a 24-C for future use

Clethodim for POST grass control

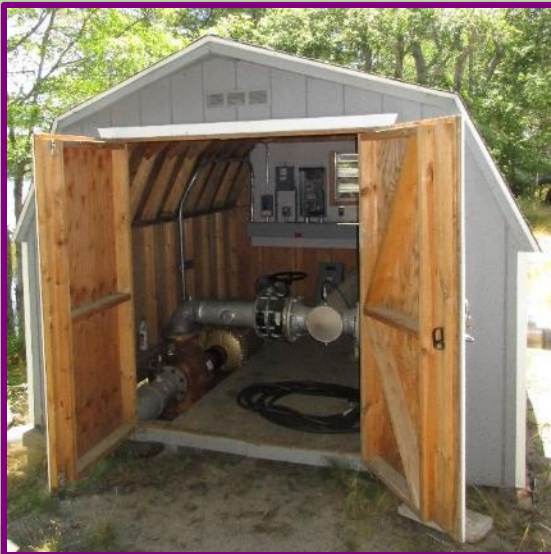
- Shown to be effective in GH and field trials
- Most effective when PG is actively growing
 - Cranberry fruit is present during this time
 - Treating with sprayer caused damage from foot traffic
- 4 apps allowed (9 -16 fl. oz per app, max 64 oz/A)
...many growers not using any!



Many growers not using good tool!

Application is a major hurdle

- Can be applied by backpack, mist blower, or aerial (were allowed)
- Can NOT be applied by chemigation
 - Main method of pesticide application for MA cranberry growers



Clethodim chemigation - cranberry crop safety

16 oz/A Intensity One with NIS at 0.25% v/v

Broadcast applications (BC) - 30 gal/A (281 L/ha)

Chemigation applications (CH) - 400+ gal/A (3,742 L/ha)

11 treatments

1x BC or CH

- roughneck
- after bloom
- 14 days after bloom

2 x BC or CH

- roughneck + after bloom
- after bloom + 14 days later

untreated control



Intensity One Chemigation Results

Cranberry fruit was collected from 1 ft² in each plot

Evaluated for number & weight of sellable fruit

- ✓ No differences between any treatment and untreated control
- ✓ No differences between BC and Chem plots



Clethodim Results

- Plots visually monitored throughout the season
 - No injury
 - Some floral deformities in roughneck treatments
 - Most severe in Howes
 - No yield difference in our experiment
 - Have had a grower report crop loss from roughneck apps on Howes



Chemigation of clethodim

Intensity One or Intensity only



- Avoid roughneck applications, esp. on Howes
- Use a surfactant!
 - Intensity One – NIS
 - Intensity – Crop Oil
- Apps must be min. 14 days apart
- 30 day PHI

Herbicides on large-fruited varieties

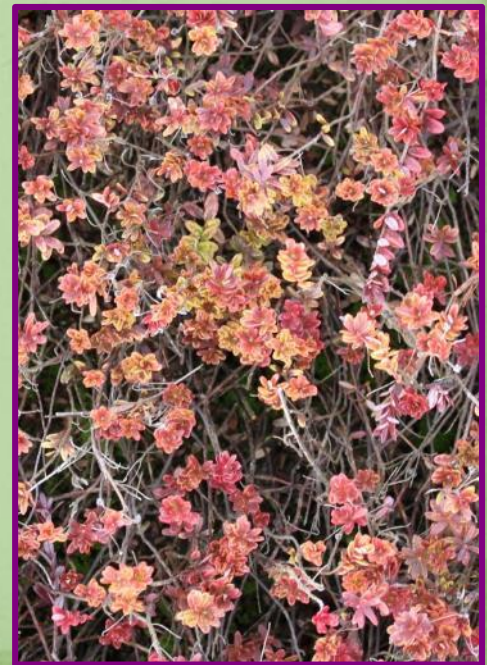
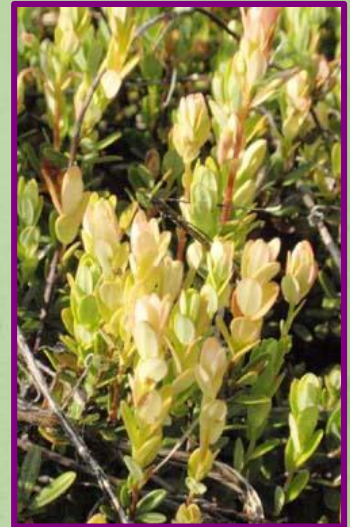
- Crop safety is based on older varieties
- There may be differences in varietal response
- Five newer large-fruited varieties tested
 - Crimson Queen
 - Demoranville
 - GH#1
 - Mullica Queen
 - Stevens



	Treatment	Rate	Active Ingredient	Application Method
1	Untreated	N/A	N/A	N/A
2	Callisto - Spot 2x	8 oz/A	mesotrione	Broadcast
3	Callisto - Chem 2x	8 oz/A	mesotrione	Chemigation
4	Casoron	60 lbs/A	dichlobenil	Granular
5	Devrinol	18 qt/A	napropamide	Chemigation
6	QuinStar - Chem 2x	8.4 oz/A	quinclorac	Chemigation
7	Intensity One	16 oz/A	clethodim	Broadcast
8	Evital (Fall) – 2016	80 lbs/A	norflurazon	Granular
9	Evital (Spring) - 2017	80 lbs/A	norflurazon	Granular

So far, so good!

- No injury was observed for any herbicide, except:
 - Some Stevens' Callisto chemigation plots showed slight whitening of cranberry tips (treated 6/6/16)
 - No symptoms in these plots when retreated 6/28/16
- By August, Yellow Vine Syndrome (YVS) Casoron plots of all varieties
 - Damage rated as being between minor and moderate
 - Stevens most impacted
- Evaluated for number and weight of sellable fruit
 - ✓ No differences between any treatment and untreated control



Questions?

